

IN THE SPECIFICATION

Please amend the specification as follows:

On page 1, line 3: The present application claims priority to Japanese Applications Nos. P2000-076615 filed March 17, 2000, and ~~P200-076616~~ P2000-076606 filed March 17, 2000, which applications are incorporated herein by reference to the extent permitted by law.

On page 8, line 15: The positive electrode 21 has a positive collector layer 25 and positive electrode mixture layers 26 disposed on ~~the~~ both faces of the positive collector layer 25. One end of the positive collector layer 25 in a longitudinal direction is exposed. The negative electrode 22 has a negative collector layer 27 and negative electrode mixture layers 28 disposed on the both faces of the negative collector layer 27. One end of the negative collector layer 27 in a longitudinal direction is exposed.

On page 9, line 12: Initially, for instance, on a belt-shaped positive electrode collector 25a (see Fig. 5) whose thickness is in the range of 5 μm to 50 μm , a plurality of the positive electrode mixture layers 26 whose thickness is in the range of 50 μm to 300 is intermittently formed in order to produce a belt-shaped positive electrode 21a (see Fig. 5). The belt-shaped positive electrode 21a becomes the above-mentioned positive electrode 21 (see Fig. 3) by separating individually. Specifically, producing the belt-shaped positive electrode 21a is conducted with the following manners. First, positive electrode mixtures including positive electrode active materials, conducting agents such as carbon black or graphite, and binders such as polyvinylidene fluoride and so on, are diffused to solvents such as dimethylformaldehyde or N-methylpyrrolidone so as to make positive electrode mixture slurry. Then, the positive

electrode mixture slurry is intermittently applied onto a surface and a back of the belt-shaped positive electrode collector 25a, then the positive electrode mixture slurry applied onto the belt shaped positive electrode collector 25a, then, the belt-shaped positive electrode collector 25a is dried and subjected to compression molding. The belt-shaped positive electrode collector 25a is made of metal foil such as aluminum (Al) foil, nickel (Ni) foil or stainless foil.

On page 11, line 13: The electrolyte-delivering machine 40 has the nozzle 41, which includes a filling unit 41a for filling the electrolyte E. One end of a supplying tube 42 is in connection with the filling unit 41a, and the other end that is in connection with a tank 43, which accommodates the electrolyte E. In the middle of the supplying tube 42, a proportioning pump 44 is disposed as a pressurization means. In the electrolyte-delivering machine 40, an unillustrated shutter is disposed in the middle of a flowing path 41b where the electrolyte E of the nozzle 41 passes through and by driving the shutter, the flowing path 41b can open and close. In connection with this, here, although the proportioning pump 44 is disposed outside the nozzle 41, a gear pump may be provided in the nozzle 41 as a pressurization mechanism.

On page 12, line 24: The coating machine also has a sensor 66 as a detecting means (for example, a reflex photo switch) near the vicinity of the nozzle 61 in a side of the winding roller 71. The sensor 66 detects a position of the belt-shaped electrode (here, the belt-shaped positive electrode 21a) while being conveyed and transmits a detecting signal to a controller 67. The controller 67 receives the detecting signal and controls the proportioning proportioning pump 64 and the shutter 65 as described later.

On page 13, line 17: In the embodiment, when forming the electrolyte layers 23, initially, the electrolyte E is accommodated into the above-mentioned tank 63 of the electrolyte-delivering machine 60. As for the electrolyte E, materials including lithium salt as electrolyte salt, nonaqueous solvents, which dissolve the lithium salt, and macromolecular compounds are employed. As for lithium salt, LiPF₆, LiAsF₆, LiBF₄, LiC1O₄, LiCF₃SO₃, Li(CF₃SO₂)₂N or LiC₄F₉SO₃, are suitable and one kind or more than two kinds materials may be used by mixing among the above-mentioned materials. In the electrolyte layers 23, the density concentration of lithium ion for nonaqueous solvents is preferably in the range of 0.10 to 2.0 mol/l. For this reason, the described range can be attained excellent ion conductivity.

On page 16 line 17: Here, when the sensor 66 detects a boundary from the collector exposed region C of the belt-shaped positive electrode 21a to the positive electrode mixture layer exposed region B, on the basis of the detection timing, the shutter 65, that has been closed the flowing path 61b of the filling unit 61a under control of the controller 67 until this moment is withdrawn to open the flowing path 61b and the proportioning ~~pomp~~ pump 64, which that has been stopped until this moment is driven with pressure in the range of 0.01 MPa to 0.3 Mpa. Thereby , as shown in Fig. 8A, the electrolyte E is delivered from the delivering open 61c of the nozzle 61 and applied on the positive electrode mixture layer 26 to form the electrolyte layers 23.

On page 18, line 14: In connection with this, in the vicinity of the winding rollers 53 and 72 of the both coating machines shown in Figs. 5 and 7, driers 54 for drying the applied electrolyte are disposed. In Fig. 7, the dryer 54 is unillustrated. The formed electrolyte layers 23 are conveyed to a position corresponding to the dryer 54, and the electrolyte dries. After this, the

electrolyte layers 23 and the belt-shaped positive electrode 21a are covered with an unillustrated plastic film made of propylene polypropylene together, and rolled by the winding rollers 53 and 72. As for this reason of covering it with the plastic film as mentioned above, it prevents nonaqueous solvents in the electrolyte layers 23 from evaporating or the electrolyte layers 23 from absorbing the water.

On page 19, line 5: Producing the belt-shaped negative electrode is conducted with the following manners. First, lithium metal, lithium alloy such as alloy of lithium and aluminum, or negative electrode materials capable of occluding and releasing lithium are mixed with binders such as polyvinylidene fluoride uniformly, then diffused to solvents such as dimethyl formaldehyde or N-methylpyrrolidone so as to make negative electrode slurry. After this, the negative electrode slurry is intermittently applied on a surface and a back of the belt-shaped negative electrode collector made of metal foil such as copper (Cu) foil, then the negative electrode slurry applied onto the belt-shaped negative electrode collector is dried and subjected to compression molding.

On page 19, line 5: Producing the belt-shaped negative electrode is conducted with the following manners. First, lithium metal, lithium alloy such as alloy of lithium and aluminum, or negative electrode materials capable of occluding and releasing lithium are mixed with binders such as polyvinylidene uniformly, then diffused to solvents such as dimethyl formaldehyde or N-methylpyrrolidone so as to make negative electrode slurry. After this, the negative electrode slurry is intermittently applied on a surface and a back of the belt-shaped negative electrode

collector made of metal foil such as copper (Cu) foil, then the negative electrode slurry applied onto the belt-shaped negative electrode collector is dried and subjected to compression molding.

On page 20, line 14: --Then, with ~~share cut~~ cutting, the belt-shaped positive electrode collector is cut between the electrolyte layers 23 to separate individually. As a result of this, a plurality of stacked bodies having the positive electrode lead 11 and sequentially formed the positive electrode mixture layers 26 and the electrolyte layers 23 on the positive electrode collector 25, is formed. With the same manner, the belt-shaped negative electrode collector is cut between the electrolyte layers 23 to separate individually. As a result of this, a plurality of stacked bodies having the negative electrode lead 12 and sequentially formed the negative electrode mixture layers 28 and the electrolyte layers 23 on the negative electrode collector 27, is formed. After this, as shown in Figs. 2 and 3, the stacked bodies are laminated in a manner to face each of the electrolyte layers 23 with the separator 24 in-between and rolled to form the rolled electrode 20. The separator 24 is made of a porous film whose main base is polyolefin material such as polypropylene or polyethylene. A material stacked more than two kinds of this kind of porous film may be used.

On page 28, line 5: In a nozzle 61 of the coating machine shown in Fig. 10, a bearing whose cross section face is a circular shape is provided in the middle of a flowing path 61b of the electrolyte E and an open-and-close shaft is equipped with the bearing in a movable way. A part of the open-and-close shaft 81 is a notch (a notch 81a). The open-and-close shaft 81 is driven by an unillustrated driving mechanism in response to the timing when the electrolyte is applied or not applied. When applying the electrolyte, the notch 81a is positioned parallel to wall sides of

the flowing path 61b and when not applying the electrolyte, the notch 81a passes across the flowing path 61b. Thereby, when applying the electrolyte, the electrolyte, which passes through the notch 81a by opening the flowing path 61b is delivered from a delivering open 61c. On the other hand, when not applying the electrolyte, the flowing path 61b closes.